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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/342,729	06/29/1999	NOBUO NAKAMURA	0039-7260-2S	7005

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EXAMINER

WISDAHL, ERIC D

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 06/18/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/342,729

Applicant(s)

NAKAMURA ET AL.

Examiner

Eric D Wisdahl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (U.S. Patent 4, 975, 777).

Regarding Claim 12, Lee discloses:

- An array of unit cells arranged in rows and columns, each unit cell comprising:
 - Light receiving device (Column 6 lines 13 – 38);
 - Charge-accumulating section (Column 6 lines 13 – 38);
 - Transfer device (Column 6 lines 13 – 38);
 - Initializing device (Column 6 lines 13 – 38, 54 – 68);
- A plurality of **vertical signal lines** extending along the columns of the unit cells, respectively, each for **receiving** an electric data item corresponding to the electric **charge accumulated** in the charge-accumulating section of any unit cell of the associated column (Column 6 lines 13 – 38);
- Control circuit for controlling each of the unit cells to:
 - Transfer the electric charge from the light-receiving device to the charge-accumulating section during a transfer period (Column 6 lines 20 – 24);
 - and

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- Causes the initialization device to initialize the charge-accumulating section during the transfer period (Column 6 lines 28 – 32).

It is noted that the only place that the examiner has noticed an “initialization device” within the specification would be that of reset transistor 34 which sets the detection node 33 to an initial potential (Page 17 lines 13 – 16, Figure 4f). Such an initialization during the transfer period would result in a straight transfer between the photodiode and the plurality of vertical signal lines.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3 – 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (U.S. Patent 4, 975, 777) in view of Egawa et al. (U.S. Patent 5, 572, 256).

Regarding Claim 1, Lee discloses:

- An array of unit cells arranged in rows and columns, each unit cell comprising:
 - Light receiving device (Column 6 lines 13 – 38);
 - Charge-accumulating section (Column 6 lines 13 – 38);
 - Transfer device (Column 6 lines 13 – 38);
 - Charge-limiting device (Column 6 lines 13 – 38, 54 – 68);

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- A plurality of **vertical signal lines** extending along the columns of the unit cells, respectively, each for **receiving** an electric data item corresponding to the electric **charge accumulated** in the charge-accumulating section of any unit cell of the associated column (Column 6 lines 13 – 38);
- Control circuit for controlling each of the unit cells to:
 - Cause the charge-limiting device to **limit** the charge (Column 6 lines 13 – 38, 54 – 68),
 - The charge having been generated by the light receiving device during a **first period**, the charges having been transferred to the charge-accumulating section through the transfer device;

Lee fails to disclose:

- Control circuit for controlling each of the unit cells to:
 - **Add** to the charge accumulated in the charge accumulating section the second charge,
 - The second charge having been generated by the light-receiving device during a **second period** following the first period, the charges having been transferred to the charge-accumulating section through the transfer device.

Egawa teaches:

- Control circuit for controlling each of the unit cells to:

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- Cause the charge-limiting device to **limit** the charge (Column 8 lines 11 – 18, Figures 7a, 7b, 7c),
 - The charge having been generated by the light receiving device during a **first period**;
- **Add** to the charge accumulated in the charge accumulating section the second charge (Column 8 lines 19 – 26, Figure 7d, 7e),
 - The second charge having been generated by the light-receiving device during a **second period** following the first period.

Such an arrangement would be advantageous in providing an improved motion-resolution without a degraded signal-to-noise ratio. Therefore, it would have been obvious to include the Control circuit for controlling each of the unit cells to: **Add** to the charge accumulated in the charge accumulating section the second charge, The second charge having been generated by the light-receiving device during a **second period** following the first period, the charges having been transferred to the charge-accumulating section through the transfer device so as to provide an improved motion-resolution.

Regarding Claim 3, Egawa teaches:

- Control circuit controls the unit cells such that:
 - During the **same vertical blanking** period in all cells (Figure 6 “BL”, Column 4 lines 43 – 52):
 - The charge-limiting device **limits** the charge to be accumulated in the charge-accumulating section; **and**

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- The charge transferred to the charge-accumulating section is **added** to the charge accumulated in the charge-accumulating section.

Regarding Claim 4, Egawa teaches:

- First period is longer than the second period (Column 2 lines 33 – 35).

Regarding Claim 5, see examiners notes Claim 1.

Regarding Claim 6, see examiners notes Claim 1.

Regarding Claim 11, see examiners notes Claims 1 and 3.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (U.S. Patent 4, 975, 777) in view of Egawa et al. (U.S. Patent 5, 572, 256) in further view of Watanabe et al. (U.S. Patent 5, 512, 950).

Regarding Claim 2, Neither Lee nor Egawa specifically teach:

- Control Circuit controls:
 - Each unit cell of the same row is controlled such that the charge in the charge-accumulating section is **limited** by the charge-limiting device during a **horizontal blanking period**;
 - Charge transferred to the charge accumulating section is **added** to the charge accumulated in the charge accumulating section during a **different horizontal blanking period**.

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Watanabe teaches:

- Activities such as excessive charge removal, shutter pulses and other processes requiring control signals should be accomplished during the horizontal blanking period so as to eliminate a variation in the signal level within the image signal period (Column 5 lines 34 – 47, Column 6 line 61 – Column 7 line 5).

Such an arrangement of limiting the charges in the charge-accumulating section and adding second charges during a different blanking period would be advantageous in avoiding a signal variation within the image signal period. Therefore, it would have been obvious to include the Control Circuit controls each unit cell of the same row is controlled such that the charge in the charge-accumulating section is limited by the charge-limiting device during a horizontal blanking period, charge transferred to the charge accumulating section is added to the charge accumulated in the charge accumulating section during a different horizontal blanking period so as to limit the amount of signal variation within the image signal period.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric D Wisdahl whose telephone number is (703) 305-4915. The examiner can normally be reached on 9:00 - 6:00 Mon-Thur every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone numbers for

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the organization where this application or proceeding is assigned are (703) 308-5399 for regular communications and (703) 308-5399 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center 2600 customer service office which can be reached at telephone number (703) 306-0377.

edw
June 12, 2003



**ANDREW CHRISTENSEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600**